A
FOURTH DISSERTATION
ON
FEVER.

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CONTAINING THE

HISTORY OF, AND REMEDIES

TO BE EMPLOYED IN

IRREGULAR INTERMITTING

FEVERS.

Medicina igitur adhuc taliter comparata est, ut fuerit magis ostenta, quam elaborata; etiam magis elaborata quam amplificata.

BACON AUG. Sc. Lib. ii. Cap. i.

Solent autem homines naturam tanquam ex præalta turri et e longo despicere, et circa generalia nimium occupari; quando si descendere placuerit et ad particularia accedere, resque ipsas attentius et diligentius inspicere, magis vera et utilis fieret comprehensio.—IBID.

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A

FOURTH DISSERTATION

ON

FEVER.

MANY authors and practitioners have thought the tertian type of fever the true type, and defcribed it as fuch: in other words, that every intermittent would recur at the end of forty-eight hours, if it were not prevented by fome accident. Whether this be the cafe or no, the author having defcribed a regular tertian, and the manner of it's treatment, proceeds in the next place to endeavour to lay down the hiftory and manner of treatment of thofe intermitting and remitting fevers, which vary in their type from the true tertian. He means by fevers obferving the tertian type, thofe

which return from the end of forty-ſix to fifty hours.

In the firſt place, the moſt obvious diſtinction between the types of fevers, or the moſt obvious variation from the tertian type in them, is, that ſome fevers recur at the end of twenty-four hours after the beginning of the former paroxyſm. In theſe each paroxyſm goes through its courſe, as in tertians, in eight, ten, or twelve hours. Theſe fevers have been called quotidian.

In the next place, in ſome intermitting fevers the paroxyſms return at the end of ſeventy-two hours from the beginning of the former paroxyſm. In theſe each paroxyſm continues for eight, ten, or twelve hours, in the ſame manner as in a tertian. Theſe have been called quartans.

In both quotidians and quartans it is to be remarked, as has been already done: Firſt, in quotidians, that the return of the paroxyſm is not abſolutely fixed to twenty-

four hours: Secondly, in quartans to ſeventy-two hours.

Quotidians may return at the end of twenty-two hours, or from that to twenty-ſix hours; although the return is more confined than in tertians, ſeldom exceeding the bounds of between twenty-three and twenty-five hours.

In like manner, the return of quartans does not always take place exactly at the end of ſeventy-two hours, but from ſeventy to ſeventy-four hours. There is alſo a greater latitude than in tertians, they ſometimes returning from ſixty-nine to ſeventy-ſix hours.

In both theſe caſes, the paroxyſm may return conſtantly ſooner than twenty-four or ſeventy-two hours: for example, conſtantly two hours ſooner. Theſe are called anticipating quotidians and quartans. In theſe the return being two hours ſooner in every paroxyſm, the beginning of the

paroxyſm may take place at any time of the day or night.

In like manner, each paroxyſm may return two hours later than the former paroxyſm. Theſe are called retarding quotidians and quartans, in the ſame manner as retarding tertians. Their paroxyſms may take place any time in the day or night.

It may alſo happen, that ſubſequent paroxyſms of a quotidian may ſometimes take place at twenty-four hours after the beginning of the former paroxyſm; ſometimes at twenty-two hours, or ſometimes at any time between that and twenty-ſix hours after the beginning of the former paroxyſm, ſo as to wander ſooner or later from the twenty-four hours, but always to be within two hours of the twenty-four. In this caſe the paroxyſms will always continue to return within two hours of the ſame time of day.

In a quartan the ſame thing may alſo happen. That is, ſuppoſing the quartan type ſhould be ſuch, as that the return of the paroxyſm ought to be at noon; the paroxyſm may nevertheleſs return at any time between ten and two, always returning therefore at within two hours of the ſame time of day.

To ſuch quotidians and quartans no particular name has been attached. They have generally been called regular quotidians and quartans, as if they had returned exactly at twenty-four or ſeventy-two hours from the beginning of the former paroxyſm.

In anticipating and retarding quotidians and quartans, the ſame indiſpoſition to return in the night time, which has already been ſhown to happen in regular tertians, is found to take place. That is, if in a quotidian or quartan the firſt paroxyſm ſhould take place at noon; the ſecond at ten o'clock in the morning; the third at eight; the fourth at ſix; it often

happens, that the fifth paroxyſm, inſtead of taking place at four o'clock in the morning of the next civil day, takes place at ſix o'clock in the evening of the day in which the fourth paroxyſm happened. So alſo if the firſt paroxyſm of a retarding quotidian or quartan ſhould happen at noon; the ſecond at two in the afternoon; the third at four; the fourth at ſix o'clock in the evening; and the fifth at eight; the ſixth, inſtead of taking place at ten o'clock in the evening, makes its appearance at ſix o'clock in the morning following, in the ſame manner as in a regular tertian.

Suppoſe it ſhould happen, that in a quotidian the paroxyſms ſhould take place at the end of twenty-four hours, or two hours ſooner or later; or in like manner in a quartan, the paroxyſms ſhould take place at the end of ſeventy-two hours, or two hours ſooner or later, ſo as to return at nearly the ſame hours of a civil day; and each paroxyſm ſhould occupy the ſpace of eight, ten, or twelve hours, from the beginning of the acceſſion to the end

of the crisis. The only differences in the history or manner of treatment, from what has been already laid down in treating on tertian fevers, are what follow, provided the disease remains a quotidian or quartan during the whole of its course.

A quotidian has a shorter course if left to itself, than a tertian—that is, if a quotidian be left entirely to itself, the intermissions become more perfect in from ten to fourteen days, when they become generally complete. If the disease be perfectly regular, they continue complete from three to four weeks; afterward the attacks become less violent, and the disease gradually goes off, so as entirely to leave the patient in about ten weeks. Whereas a regular tertian, going through its natural course, seldom leaves the patient in less than fourteen weeks.

On the other hand in a quartan, if the paroxysms from the beginning return from the end of seventy to seventy-four hours, the intermissions seldom become

complete till about three weeks. If they continue to return at that period of time through the whole courſe of the diſeaſe, the intermiſſions afterward become longer, and are more perfect. The diſeaſe is apt to run out for five months before there are any ſigns of abatement, and it is often ſix, ſeven, or eight months before the diſeaſe ceaſes entirely.

Suppoſing that no accident ſhould take place during the ordinary progreſs of a quotidian or quartan, the ſame obſervation is to be made with regard to leaving the patient free from any habitual diſeaſe, as has already been made in the Diſſertation on regular tertian; with this exception, that a regular quotidian is not ſo efficacious as a regular tertian, and a regular quartan is ſtill leſs efficacious, or rather it is apt to ſubject patients to diſeaſes ariſing out of itſelf.

Although the greater number of intermitting fevers follow the tertian, quotidian, or quartan type, yet it ſometimes happens,

happens, that intermittents return at the end of ninety-ſix hours, ſo that they may be called quintans; and even ſome which may be called ſextants; and the author has ſeen two or three caſes of ſeptants. All the types beyond quartans, that have come under his obſervation, have not continued for more than five or ſix paroxyſms, after which they have gone off, or returned to quotidians, tertians, or quartans.

It has often happened, that intermittents, inſtead of recurring at the end of forty-eight, twenty-four, or ſeventy-two hours, or two hours ſooner or later than theſe periods, have recurred at different times; as for inſtance, at the end of thirty-ſix hours, or two hours ſooner or later.

Of ſuch fevers it muſt be obſerved, that they alſo have a diſpoſition to vary from thirty-four to thirty-eight hours, or whatever be their period, in the ſame manner as tertians, quotidians, and quartans.

It

It is alſo to be obſerved, that they have a great indiſpoſition to return between eight in the evening and ſix in the morning, which indiſpoſition renders them extremely irregular; for if a paroxyſm ſhould take place at noon, on Sunday, the next paroxyſm ought to take place at midnight between Monday and Tueſday; but inſtead of that it often returns either at eight on Monday evening, or at ſix on Tueſday morning, or ſomewhat earlier on Monday evening, or later on Tueſday morning. Such fevers are alſo generally extremely irregular, whether they obſerve that or any other type different from the tertian, quotidian, or quartan.

Intermittents, which recur at the end of thirty-ſix, or any other number of hours, different from the hours at which quotidians, tertians, and quartans recur, if even each paroxyſm continue only for eight, ten, or twelve hours, go nearly through the ſame progreſs as regular tertians, quotidians, or quartans; yet, however, they are not ſo apt to ariſe gradually to a certain height,

height, or to have ſo perfect criſes, or to go off by the paroxyſms gradually diminiſhing, as either of thoſe which obſerve the regular types are.

It is to be obſerved, that it happens not uncommonly, that an intermittent, which returned at the beginning at thirty-ſix, or any other number of hours not coincident with the tertian, quotidian, or quartan type, very frequently in its progreſs becomes tertian, quotidian, or quartan.

Whether a fever be a regular tertian, quotidian, or quartan, or follow any other type, provided the paroxyſms continue for eight, ten, or twelve hours, and the criſes are tolerably complete, every obſervation which has been made with regard to a regular tertian applies to them alſo, both with regard to their progreſs and manner of treatment. It is alſo to be obſerved, that a regular tertian goes through its courſe with greater regularity than an intermittent of any other type, and with leſs danger to the patient; it is alſo more readily

readily carried off by remedies. Quotidians are the next in theſe points to tertians. A regular quartan is apt to be attended with many more accidents, but not ſo apt to be irregular as fever obſerving any other type, excepting a quotidian or tertian.

Whether therefore an intermitting fever be a tertian, quotidian, quartan, or obſerve any other type; if that type ſhould ariſe at the beginning, or if the diſeaſe ſhould reſemble a regular continued fever for the firſt ten days, and afterward break down into an intermittent: if the paroxyſms go each through their courſe in about twelve hours, and terminate in a tolerably perfect criſis, and continue the ſame type; or if at the beginning, or after they became intermittents, they changed their type to a longer one; in any of theſe caſes, if they become more perfect in their intermiſſions for the firſt week or two, afterward remain for ſeveral weeks nearly equal, and then gradually diminiſh; if the acceſſions become leſs ſevere, and the intermiſſions more perfect, until the diſ-

eaſe

eaſe gradually goes off; or if a ſeverer paroxyſm ſhould have taken place, and terminated in a more perfect criſis, and the diſeaſe ſhould not afterward return: if an intermitting fever of any type ſhould thus go through its courſe, every obſervation that has been made, and every mode of treatment that has been laid down in the Diſſertation on regular tertian, are applicable.

The only attention, that is further to be paid, is in thoſe caſes where irregularity or accident occaſions intermittents to leave the courſe of a regular tertian, and become more dangerous in conſequence.

The author means now, therefore, to enumerate theſe irregularities and accidents.

The firſt variation from a regular tertian, he means to take notice of, is a prolongation of the paroxyſms, ſo that inſtead of continuing for eight, ten, or twelve hours, each continues for a much greater

length

length of time before the criſis is completed.

The firſt cauſe of prolongation of the paroxyſms is a diſeaſe, which is apt to be excited in fever, and which the author intends to call general inflammation.

This diſeaſe ariſes ſometimes in conſequence of fever; frequently from many other cauſes, and has often been called fever itſelf; ſometimes inflammatory fever, ſometimes inflammatory diatheſis. It differs, however, from fever wholly; as it may ariſe, continue its courſe, and terminate, without any fever being preſent; and a fever may ariſe, purſue its own courſe, and terminate, without general inflammation at all taking place.

The moſt ſimple appearance in general inflammation, and which ſeems to conſtitute the diſeaſe, is hardneſs of the pulſe.

Hardneſs of the pulſe is an action in the arteries in contracting, which gives a peculiar feel to the finger preſſed moderately upon the ſkin lying immediately over any large artery; ſuch as, for example, the radial artery in the wriſt.

The ſenſitive powers of different perſons are by no means the ſame.

The author wiſhes to avoid all metaphyſical queſtions, and therefore leaves it to thoſe who chooſe to amuſe themſelves with ſuch ſubjects, whether it be by ſome formation of the organs of the ſenſes congenial with man, or whether acquired by education, that there are certain diſcriminations of ideas, which the organs of the ſenſes of one perſon may receive, and which the organs of the ſenſes of another perſon cannot receive.

For inſtance, one perſon may be perfectly ſenſible by his ear of the concordance or diſcord of the number of vibrations of any muſical inſtrument, ſo as to

produce pleaſure or pain; while the ear of another perſon may be in no wiſe capable of making ſuch diſtinction, and he may be capable of receiving no pleaſure from concordant vibrations, or pain from ſuch as are diſcordant.

In like manner, the ſenſations from feeling are much more acute in ſome perſons than in others. We are told from authority that can hardly be doubted, that ſome blind men have been able to diſtinguiſh colours by feel, at leaſt to be able to diſtinguiſh the ſhape of the coloured from the uncoloured parts of cards, ſo as to be able to play at games of which theſe are the inſtruments.

The author wiſhes to ſhow that a man, whoſe ears are not ſo attuned to muſical notes, is not warranted to ſay that no other man's ears are attuned to muſical notes, ſo as not to be able to diſtinguiſh between concord and diſcord; ſo in a much ſtronger degree, a man ſhall not ſay, that, becauſe he cannot diſtinguiſh between objects of

different colours, or between the ſhades of a coloured part of a card, and the white part of it, by feeling that no other man is capable of making that diſtinction.

In like manner, if a man ſhould ſay, that he could find no ſuch diſtinct feelings in the pulſation of an artery, will it prove, that another man cannot find ſuch diſtinction? Dr. William Hunter, for example, however great an anatomiſt, conſtantly denied, that he could feel any ſuch diſtinction as hardneſs of the pulſe, neither could his ears diſtinguiſh concord from diſcord; while his brother, Mr. John Hunter, as he has affirmed in his works, could well diſtinguiſh hardneſs of the pulſe, and, as the author knows, could alſo diſtinguiſh concord from diſcord in a muſical inſtrument.

The author thinks he has eſtabliſhed, that a man's denying that his organs of ſenſation can diſcriminate between two ſenſations, is not a proof that ſuch diſtinction cannot be felt by others. He

could readily cite a great many authorities, on which he might reſt himſelf, that there is ſuch a ſenſation as hardneſs of the pulſe, to be felt by laying the finger upon the ſkin over a conſiderable artery; but he thinks it better to refer the proof of this argument to that which may perhaps be thought of much more weight.

If a vein be opened after a ligature, or any other preſſure has been made upon it, between an opening into it and the heart; and if blood ſhould flow from the opening into a baſin, the ſhape of which ſomewhat approaches to the ſection of a ſphere; it ſometimes happens, that the blood coagulates in the baſin in leſs than a minute, and ſometimes it is four or five minutes before it coagulates. This difference depends in ſome meaſure on the circumſtances in which the opening is made, and the blood flows.

If the vein which is opened be large; if the orifice be alſo large; if the blood flow in a ſtream through the air from the orifice

fice into the baſin; if the baſin be a perfect ſection of a ſphere; if the quantity of blood taken away be large and flows quickly; it will be more apt to continue fluid for a greater length of time.

If the vein from which the blood is taken be ſmall; if a ſmall orifice be made in it; if the blood, inſtead of flowing in a ſtream through the air, ſhould run down upon the ſkin of the arm into the baſin; or if, inſtead of flowing immediately through the air in a ſtream, the ſtream be intercepted by any ſurface, and from that ſurface ſhould fall into the baſin; or if the baſin, inſtead of being a ſection of a ſphere, ſhould be of ſome other figure, the ſurface of which is larger in proportion to its contents; in all theſe circumſtances the blood will coagulate ſooner.

When the blood coagulates ſoon, there is not time for the red particles to ſubſide from the top of it, and the whole coagulates into a red maſs. When the blood is received into a veſſel, and coagulates

ſlowly, the red particles, being of greater ſpecific gravity than the other parts of the blood, have time to ſubſide, ſo that the blood ſeparates into two parts before the coagulation takes place, the upper part forming a fluid nearly colourleſs and tranſparent, and the lower part forming a red opaque fluid; and when the coagulation takes place, the upper part is of a blueiſh or yellowiſh colour, and the under part red.

Both when the blood coagulates ſoon, and does not give time to the red globules to ſink from the upper part of the blood; and when the blood is long coagulating, ſo as to give time for the red particles to ſink from the top of the blood: when the whole is coagulated, it appears at firſt a perfect ſolid; only when it coagulates ſoon the whole appears a red ſolid, but when it coagulates ſlowly it has the appearance of a ſolid, the ſurface of which is colourleſs, or rather with a yellowiſh or browniſh tint to the depth of a quarter of an inch, or a little more, and below that it is of a red

red colour. In both caſes a fluid generally oozes out from the ſurface of the ſolid maſs, in which fluid the ſolid maſs ſwims. When the blood is coagulated quickly, the whole of the ſolid maſs is red, and when the blood is coagulated ſlowly, the greateſt part of the ſolid maſs is red, but covered at the top with a cruſt nearly colourleſs, but ſomewhat tinged with yellow or brown, which cruſt has often been called the buff of the blood.

It has been already ſaid, that the ſize of the vein, the ſize of the orifice made in it, the flowing of the blood in a full ſtream through the air, and the ſhape of the baſin into which the blood is received, have a conſiderable influence on the blood's coagulating ſooner or later, and in conſequence, a cruſt's being formed on the ſurface of the blood, after it has coagulated, free from red particles.

It is alſo to be obſerved, that independent of all theſe circumſtances; or in other words, ſuppoſing that blood be taken

from two perſons, when all the above circumſtances have been exactly the ſame; the blood ſhall be longer coagulating, and in conſequence ſhow what has been called a buff, when taken from the one perſon; and coagulate ſoon, and conſequently ſhow no buff, when taken from the other perſon.

In this caſe, excepting in a few inſtances, when the blood coagulates ſlowly, the pulſe has a feel of hardneſs, and there is a buff on the ſurface of the blood; whereas, on the other hand, when the pulſe has no ſuch feel of hardneſs, the blood coagulates quickly, and there is no appearance of a buff on the ſurface of the coagulum.

Here then is another criterion, beſide the power in the practitioner of diſtinguiſhing ſenſations, by which the actions of the arteries may be diſcriminated, to wit: that they ſometimes act ſo as to make the blood coagulate ſlowly when it flows from a vein into a baſin, when

taken in the ſame circumſtances, and that they act in other caſes ſo as to occaſion the blood to coagulate ſoon when it is received into a baſin.

The author further affirms, that when the pulſe has a feel of hardneſs, the blood taken from a vein is longer coagulating, than when no hardneſs is to be felt; and that therefore there is actually a ſenſation of hardneſs to be felt in the pulſe, in contradiſtinction to all other ſenſations, viz. That the action of the arteries, which gives this ſenſation, alſo produces a diſpoſition to make the blood remain longer fluid after flowing from a vein into a baſin, under the ſame circumſtances.

It is to be obſerved, that every thing on this earth follows by gradation. The twilight, which begins in the morning, gradually acquires meridian ſplendour, and gradually ſinks from its meridian ſplendour into the ſhades of night. There is a gradation of animals from human beings, until they deſcend through quadru-

peds, fiſh and reptiles, and come down at laſt to corals, ſpunges, and muſhrooms; until it is difficult to ſay which is animal or vegetable. Such gradations are there alſo in the feels of the pulſations of the arteries.

In ſome caſes the ſenſation of hardneſs in the pulſations of the arteries can hardly miſs being ſenſible to any perſon, who has the leaſt delicacy of feeling; as happens in violent pleuriſy and acute rheumatiſm. In ſuch diſeaſes, it is difficult to produce a quick coagulation of the blood, or appearance of buff on the ſurface of the coagulation: to prevent it, it is not only neceſſary to make a ſmall orifice in a ſmall vein, and let the blood run down the arm into a ſhallow veſſel, but it is even neceſſary to interpoſe ſome other ſubſtance, the ſurface of which it ſhall run over before it falls into the baſin, to make it coagulate quickly, and ſo ſhow no buff on the ſurface of the coagulum; while in other caſes the ſenſation of hardneſs is hardly diſcernable, and the leaſt variation of the

circumſtances,

circumſtances, with which the blood is taken, will prevent the appearance of a buff. There is another ſenſation which the pulſation of the arteries gives, which the author calls obſtruction.

This obſtruction of the pulſe has been generally felt in fevers, and has been called hardneſs by many authors. That it is a different affection of the arteries which gives this ſenſation to the pulſe, is very evident, ſince the feel of obſtruction may be very great; and nevertheleſs, blood flowing from a vein into a baſin, under all the circumſtances moſt favourable to its remaining fluid, coagulates immediately, and of conſequence no buff appears on the ſurface of the coagulum.

It happens often at the beginning of the hot fit of an intermitting fever, that the pulſe is very much obſtructed, and has by many authors been ſaid to be hard; yet frequently, indeed always, when it is only obſtructed, and not hard, if blood be taken from the arm, and received into a baſin, under all the circumſtances that tend to

make

make it remain fluid, it neverthelefs coagulates immediately, fo that no buff appears on the furface of the coagulum.

Fulnefs and ftrength of the pulfe have alfo been often confounded with hardnefs; but neither fulnefs nor ftrength is at all neceffary to the feel of hardnefs ; for in an inflammation of the inteftines the pulfe is alway hard, and blood taken from a vein into a bafin remains long fluid, confequently the coagulum is covered with a buff. The pulfe in this cafe is hard, but not full or ftrong.

Hardnefs, therefore, is a peculiar fenfation given by the pulfation of the arteries, different from ftrength, and fulnefs, and obftruction, as well as from every other fenfation, which the pulfation of the arteries produces in a finger applied to the fkin immediately over an artery.

The fenfation of hardnefs in the pulfe is evidently a mark of ftronger action of the arteries. The coagulable lymph, in confequence of an animal's being alive, remains

mains fluid ; the mucilaginous part of it remains diſſolved in the water. In the blood veſſels of dead animals, the mucilaginous part ſeparates from the water with which it is combined ; it is therefore the life of the blood veſſels, which keeps the mucilaginous part diſſolved in the water, and conſequently the coagulable lymph fluid.

It has been ſaid, that the mucilage of the coagulable lymph remains ſoluble in water, in living animals, becauſe the blood in a living animal is conſtanly in motion ; and that it is the motion which occaſions its ſolubility in water, and conſequent fluidity. But that this is not the caſe, is evident. In the firſt place, without adverting to this chemical maxim, that motion or reſt can have no effect on the powers of chemical combination, this muſt be obſerved. In a fainting fit, which is ſometimes continued for many hours without any motion's being perceived in the heart, or pulſation in the arteries, and conſequently without any motion of the

the blood, the blood has remained fluid; and consequently the mucilage of the coagulable lymph has remained soluble in water. In a dead body, however, in a much less number of hours, it separates from its water and becomes solid, so as to render any further circulation of the blood impracticable.

There is not any instance of the mucilage of the coagulable lymph, after it has been once separated from its water by coagulation, becoming soluble in water again, excepting by putrefaction, or by boiling in water, or maceration in water, heated to nearly two hundred and twelve degrees, or at least to more than one hundred and forty degrees. This is a heat much superior to any that ever takes place in the living human body. It is not therefore motion, that gives the mucilage of the coagulable lymph a disposition to remain soluble in water, and therefore fluid; but a stronger action of the living power exerted in the arteries. It may be conceived, that the fluids of the human body, as well

as

as the ſolids, have chemical properties, in conſequence of their being alive, which they have not when they are dead.—In this caſe, when the blood remains fluid for a long time after it flows from a vein into a baſin, ſo as to allow the red globules to fall from the top before it is coagulated, and ſo as to give the appearance of buff to the ſurface of the coagulum, we muſt conceive, that the life remains in it for ſome time after it is taken out of the body.

Whatever may be the caſe, whether it be that this continuance of fluidity of the blood for a longer ſpace of time is owing to the ſuperior action of the arteries on the blood, or that the life remains in the blood itſelf, longer after it is taken from the body, its remaining long fluid, and in conſequence a buff appearing on the ſurface of the coagulum, ſhows that there is a ſuperior action of the living power in the body when there is hardneſs of the pulſe. This hardneſs is pointed out by the feel of the pulſation of the arteries; and by the blood when once taken from a vein

a vein into a basin, in the circumstances already enumerated, showing an appearance of buff on the surface of the coagulum.

Hardness of the pulse alone shows, that the living power is acting too strongly in the blood vessels, for a man to be considered in perfect health. Sometimes this sensation is accompanied with no other appearance of stronger action of the living power in the blood vessels, nor does it disorder a man not afflicted with any other disease, so as to prevent him from going through the ordinary functions of life; but if it should take place in any disease, it very often alters the progress of that disease.

If it should happen in a regular tertian, it prolongs the time of each paroxysm of the tertian; so that instead of the paroxysm going through its ordinary course in eight, ten, or twelve hours, it may require, twelve, fourteen, sixteen, or many

more

more hours for it to go through that courſe.

An action in the arteries producing a feel of hardneſs in the pulſe, conſtitutes general inflammation, and forms the ſimpleſt caſe of the diſeaſe; but other ſymptoms frequently attend it. The heart often acts more ſtrongly; that is, the left ventricle contracts with greater force, ſo as to propel the blood with greater force into the arteries. In this caſe, if the finger be preſſed upon a large artery lying immediately under the ſkin, the artery during the time of its diſtention reſiſts the preſſure, and it requires a greater preſſure to prevent its being diſtended, which ſenſation has been generally called ſtrength of the pulſe.

By this ſtronger action of the heart and arteries, the velocity of the blood is alſo increaſed, by which means it is made to return faſter upon the heart, and ſtimulate the heart to more frequent contractions, ſo that the pulſations of the arte-

tries are not only hard and ſtrong, but alſo frequent.

It happens too, if there be no other diſeaſe but general inflammation, that the left ventricle makes a full and complete contraction. When any muſcle makes a full and complete contraction, it is fully and completely relaxed after ſuch contraction. The ventricle of the heart then, after making a complete contraction, makes a complete relaxation, and receives into it a large quantity of blood from the auricle, and propels all that blood at each contraction into the arteries, ſo that the artery in which the pulſe is felt is greatly diſtended, and the pulſe becomes not only hard, ſtrong, and frequent, but alſo full.

If the pulſe ſhould become hard alone, we cannot ſay that a man is in perfect health, but if it alſo become full, ſtrong, and frequent, it certainly conſtitutes a diſeaſe of itſelf; that is to ſay, it prevents the functions of the body from being car-

ried on perfectly and regularly, and may even produce ſuch derangements in the ſyſtem, as to deſtroy the patient. This diſeaſe the author calls general inflammation.

The ſlighteſt caſe of general inflammation then is hardneſs of the pulſe, in any degree, for in perfect health there is no ſuch ſenſation in the pulſation.

When the diſeaſe is in ſomewhat a greater degree, the pulſe is not only hard, but there is a ſenſe of fulneſs and uneaſineſs all over the body, a want of appetite and reſtleſs ſleep.

If the diſeaſe ſhould be in a ſtill greater degree, the pulſe becomes full, ſtrong, and frequent, from about a hundred to a hundred and ten pulſations in a minute. It is alſo uniform, that is to ſay, the pulſations are equal in time, frequency, and force, provided the diſeaſe does not ariſe in conſequence of any other diſeaſe exiſting in the ſyſtem.

With theſe appearances there are want of ſleep, total loſs of appetite, ſenſe of univerſal diſtention, flying pains in the extremities, general tumour and redneſs, the patient draws his breath deep, there is ſometimes cough, pain in the internal part of the head, the patient complaining that his head is ready to burſt, fullneſs of the veſſels of the eyes, and delirium.

When this diſeaſe proves fatal, the feel of tenſion throughout the ſyſtem ſuddenly going off, the patient ſinks, or the affection of the brain may be ſo great as to deſtroy the patient.

It is not the author's buſineſs in this Diſſertation to ſhow the general cauſe, progreſs, and termination of this diſeaſe. It is ſufficient at preſent to remark, that it is not uncommonly excited in a regular tertian, and other intermitting fevers; and to point out the effects which it produces in intermitting fevers, and the means of counteracting them.

General inflammation is excited in intermitting fevers moſt commonly when they happen in temperate and cold climates; and in particular ſtates of the fever itſelf, eſpecially when the fulneſs ariſing from the ſmall veſſels, contracting and filling the large veſſels with blood, diſtends them, and ſtimulates them, or perhaps from ſome other cauſe.

When general inflammation ariſes in a regular tertian, the pulſe in the hot fit is not only full, ſtrong, frequent, and obſtructed, but likewiſe hard; if blood be taken from the arm, the red particles fall from the ſurface before it coagulates, ſo that after the ſpontaneous ſeparation, the coagulum is covered with a buff-coloured cruſt.

There is fulneſs of the veſſels of the head ſhown by the veſſels of the eye appearing more numerous, and the external jugulars appearing fuller. The pain of the head is greater and is felt more internally, and there is ſometimes delirium

even in the firſt paroxyſm of the diſeaſe. More particularly the hot fit is protracted. The paroxyſm often continues in a regular tertian, for thirty-ſix or forty hours before any critical ſymptoms take place. The criſis is not perfect, the pulſe ſtill remaining frequent, the appetite not returning, the tongue being ſtill covered with a cruſt, and the head-ach remaining, though in other reſpects the patient is relieved, and falls into a quiet ſleep for a few hours.

Sometimes again the relief is but trifling, and a practitioner would be led to ſuppoſe it a continued fever, excepting that the paroxyſms attack the patient in the day time, not in the evening; that the exacerbations are greater; and that they obſerve very exactly the tertian type.

This is one of the caſes of fever that was called by the Greeks Hemitriteon, and by Celſus Semitertian, though certainly not the moſt frequent caſe to which they gave that name.

If general inflammation ſhould take place in a great degree in a quotidian, there is for the firſt week, or a day or two longer, all the appearance of a continued fever, except that the exacerbations take place in the day time, and not in the evening.

If it ſhould be one of thoſe anomalous caſes, which fall between a quotidian and a tertian; if the returns of the paroxyſms ſhould be near the quotidian type, that is to ſay, in leſs than thirty-ſix hours, the diſeaſe has at firſt the appearance of a continued fever, excepting for the times of the recurring of the exacerbations as in a quotidian. If it ſhould be nearer a tertian, it is more near to what happens in a tertian, that is to ſay, there is ſome appearance of criſis taking place before the next exacerbation comes on.

If general inflammation ſhould take place in a great degree in a tertian, which is afterward a quartan, moſt commonly during the time the general

inflammation continues, it keeps it in the tertian type; but if it ſhould not retain the tertian type, the paroxyſm is prolonged from thirty to fifty hours; and the criſis is very incomplete; the pulſe eſpecially continuing hard, and often full and ſtrong during the time of the intermiſſion.

When in any caſe general inflammation has prevented the criſis from leaving the patient in an intermitting fever ſo free from the diſeaſe, as to take off the hardneſs, fulneſs, and frequency of the pulſe, the foulneſs of the tongue, and internal head-ach, the diſeaſe has been looked upon by many practitioners as a continued fever. That it is not, is known, firſt by the exacerbation taking place between ſix in the morning and five in the afternoon; and ſecondly by the fever breaking down into a complete intermittent, after the general inflammation is gone off.

The exertions which take place in conſequence of the fever itſelf, and the in-

creaſed action of the heart and arteries which conſtitute general inflammation, gradually weaken the ſyſtem, and by this means carry off the general inflammation, and afterward the intermittent becomes regular. This happens commonly before the end of the ſecond week of the diſeaſe; the fever, after the general inflammation is gone off, goes on much the ſame as if no general inflammation had ariſen, with this difference, that it is more irregular.

In temperate and cold climates, general inflammation happening at the beginning of an intermittent is not often fatal, even during the time that it renders the intermittent ſimilar to a continued fever.

If general inflammation ſhould not prevent the criſis from taking place, it is hardly ever fatal either in itſelf, or in it's conſequences.

In hot climates, general inflammation more ſeldom happens; but when it does take place, it renders it doubtful whether

remedies can be employed at the beginning of the disease, which, if they had been employed, would have carried the general inflammation off, until it is too late for their being of any use. If general inflammation should take place in an intermittent in temperate or cold climates, there is no mischief arises from employing remedies to carry it off.

The most powerful remedy for carrying off general inflammation is evacuating the bloodvessels.

The bloodvessels must always contract themselves so as to adapt themselves to the quantity of blood, which is contained in them. They must always be cylindrical, when not compressed by an external force.

This contraction is an exertion of the living power. It was long thought to depend upon the elasticity of the vessels.

Elasticity is a power which dead mat-

ter has, which occaſions a cylinder to contract, if it be diſtended beyond it's diſpoſition to contraction, at the ſame time occaſions it to become larger if the cylinder be made of leſs diameter by any other force, as has been ſufficiently explained in a former Diſſertation.

That the contraction of the veſſels, ſo as to adapt themſelves to the blood which is in them, depends on a power which ariſes from the life, is evident from theſe experiments and obſervations.

If an animal be killed by any means which do not empty the bloodveſſels, ſuch as breathing a quantity of air unfit for reſpiration, as ſoon as the body is dead, and without any exudation from the bloodveſſels into the other cavities, the bloodveſſels enlarge, and in conſequence become in part empty. The arteries become ſo empty, that it was ſuppoſed by the ancients, that they contained only air when the animal was alive. The veins are no longer cylindrical, but flat. The paleneſs

of all the parts in proportion to their floridneſs when the animal was alive ſhows, that the capillary veſſels contain alſo a leſs quantity of blood in proportion to the diameter which they now aſſume.

From theſe appearances it is evident, that the bloodveſſels have loſt that power, which contracted them to the ſize they are at in a living animal, and that, being left to their elaſticity, it has diſtended them. Therefore their elaſticity is ſo far from being the power, that contracts the bloodveſſels ſo as to adapt them to the blood that is in them in the living animal, that it is conſtantly endeavouring to counteract that power, and to diſtend the veſſels.

This action of the living power, which contracts the bloodveſſels ſo as to adapt them to the preſent quantity of blood, is the firſt and moſt neceſſary exertion of the living power; becauſe if the bloodveſſels be in any way emptied, ſo that there is not a ſufficient quantity of power in the

body

body to contract them to the remaining blood, every other operation, whatever it may be, ceases. All the exertions of the body and mind, as has already been shown, are also diminished, while the blood-vessels contract, and continue cylindrical and full, if a portion of the blood be taken away. If a man is accustomed to labour, that is, to employ his muscles in pulling along any weight, he can only pull a certain weight forward in a given time, according to his strength. For example, he can pull forward a hundred weight, with a velocity of a mile in an hour. If the blood vessels of this man be emptied so that they shall contain a pound less blood in them, the bloodvessels will contract so as to adapt themselves to the remaining blood, but the man shall not be able to pull forward a hundred weight with a velocity of a mile in an hour; but shall be obliged, if he be to pull a weight forward at a mile in an hour, to retrench it to half a hundred weight, or if he must pull the whole hundred weight forward, he cannot do it with a velocity greater than half a mile in an hour.

Again,

Again, this argument may be taken in another light. Suppofe a man in full vigour is capable of pulling along a hundred weight with a velocity of a mile in an hour, and can maintain this labour for fix hours together, when his ftrength is exhaufted, and he is obliged to reft, that it may be recruited, before he can begin his labour again. If in this man a pound of blood be taken away, the blood-veffels will contract themfelves and continue cylindrical, and perfectly full of blood; but the man will not be able to pull forward a hundred weight with a velocity of a mile in an hour for more than three hours together; but at that time he fhall be obliged to reft, fo that his ftrength may be recruited.

The author does not mean to affirm, that diminifhing the quantity of blood by a pound will exactly diminifh the powers a man has in drawing forward a weight by one half; he has only taken this proportion by way of illuftration. The argument

gnment will hold equally, whatever the diminution of the muſcular power by diminiſhing the quantity of blood by a pound may be. Certain it is, that the muſcular power, by ſuch diminution of the quantity of blood, will be greatly diminiſhed, he thinks more than the proportion he has taken, while the bloodveſſels can contract ſo as to adapt themſelves perfectly to the blood which is left, and remain perfectly cylindrical and full.

In the ſame manner, if the heart and arteries be exerting themſelves, ſo as to propel the blood forward with a certain force into the capillaries and veins; if the quantity of blood contained in the bloodveſſels be diminiſhed, they will contract ſo as to adapt themſelves to the quantity of blood remaining in them, and continue cylindrical and full; but the heart and arteries will no longer be capable of propelling the blood forward with the force, with which they were capable of propelling it before the diminution of the quantity of blood contained in them.

This

This diminiſhing the quantity of blood in the bloodveſſels will occaſion an increaſed exertion in the ſides of the veſſels, in order to adapt them to the remaining quantity of blood, but will diminiſh all other action in the body, whether it be in the muſcular or any other of the moving parts.

This effect of diminiſhing the quantity of blood in the bloodveſſels, and, if it may be ſaid, drawing the living power of the body into the ſides of the veſſels, diminiſhes all other action, and may go ſo far as to make all other action ceaſe and be fatal. We ſee therefore, that the loſs of a certain quantity of blood kills.

By diminiſhing the quantity of blood in the bloodveſſels, the increaſed action of the heart and arteries, which has been deſcribed as hurtful in fevers, may be diminiſhed upon theſe principles, and the general inflammation carried off. The miſchiefs ariſing from it, which have already been pointed out, to wit, prolong-

ing the hot fit ſo as to render the intermiſſions ſhort and imperfect; it's converting an intermittent into a continual fever; it's proving fatal by the general diſtention in the whole body; it's oppreſſing the brain, and producing delirium, and occaſioning the death of the patient; may be avoided by diminiſhing the quantity of the blood.

The quantity of blood in the bloodveſſels may be diminiſhed; firſt, by making an opening immediately into any bloodveſſel, and letting a quantity of blood flow out; ſecondly, by increaſing the ſecretion from almoſt any of the glands in the body.

When a bloodveſſel is opened in any part of the body, ſo as to let a quantity of blood flow out from it, the circulation is ſo quick, and the bloodveſſels communicate with each other ſo perfectly, that the blood is equally evacuated from every part of the body.

The ſecretion from glands may be increaſed; firſt, by ſtimulating the ſecretory or excretory ducts of the glands. This cannot be done without alſo ſtimulating the bloodveſſels in the neighbourhood of theſe glands, and ſo increaſing the circulation in that part of the body, and of courſe diminiſhing it in the other parts of the body, and thus rendering it irregular. It has been ſhown in a former Diſſertation, that every irregularity in the circulation tends to prolong the paroxyſm of fever, and render the criſis more imperfect. Now if we diminiſh the quantity of blood, and take off the general inflammation by bleeding, we do not render the circulation irregular; but if we produce the ſame effect by ſtimulating any ſet of glands, we do render the circulation irregular, and therefore the general inflammation is better taken off by bleeding, than by increaſing the ſecretion from any of the glands, in fever. Secondly, we may increaſe the ſecretion from any ſet of glands by relaxing them, or by throwing a larg erquantity of blood upon them by contract-

contracting the veſſels in ſome other part of the body. In this caſe too, we render the circulation irregular. In whatever way therefore ſecretion is increaſed from any ſet of glands, ſo as to diminiſh the blood in the bloodveſſels, an irregularity of the circulation is produced, which does miſchief in fever.

Opening a bloodveſſel, ſo as to let out a quantity of blood, is therefore the only means that ſhould be employed, to diminiſh the quantity of blood in the bloodveſſels, and carry off the general inflammation, when it is doing miſchief in intermitting fevers.

The beſt mode of opening a bloodveſſel in this caſe is, to open a large vein in the arm, or any other part of the body, ſo as to allow the blood to flow out quickly.

It is of conſequence to take away a ſufficient quantity of blood at once, to take off the general inflammation, and

that it ſhould flow quickly from the bloodveſſel.

If blood be taken quickly, and in conſiderable quantity from a bloodveſſel, the larger veſſels are emptied in a greater proportion, the ſmaller ones not having time to contract, and ſupply the large ones with blood.

Diminiſhing the quantity of blood in the large veſſels, ſo as to make them contract in a greater degree, weakens much more than emptying the ſmall veſſels, and making them adapt themſelves to a ſmaller quantity of blood. If blood be taken from a large veſſel quickly, and in conſiderable quantity at once, the large veſſels are emptied, and the effect in weakening the action of the living power is much greater, than if the ſame quantity of blood had flowed ſlowly from the veſſels, or been taken at different intervals of time.

At leaſt taking away a large quantity of blood at once quickly, diminiſhes the living power of the body, much more than taking away the ſame quantity ſlowly, or at ſeveral different times.

This is proved by the following experiment, which is almoſt daily repeated in London. If it be wiſhed to kill an animal, ſuch as an ox or a ſheep for example, and to leave a large quantity of blood in the ſmall veſſels ſo as to give a red colour and greater weight to the fleſh, the carotid artery is opened ſo as to let the blood flow out as quickly as poſſible. In this caſe, a much ſmaller quantity of blood, flowing out quickly, weakens ſo as to kill the animal. If it be wiſhed to leave as ſmall a quantity of blood in the ſmall veſſels as poſſible, in order to make the fleſh look white, as is done in a calf, then the blood is firſt taken from a vein, until the animal nearly faints. This bleeding is repeated ſometimes more than once, before a large artery is opened, and the animal allowed to bleed to death. By this means, a much larger

quantity of blood is taken away, and the ſmall veſſels are much more emptied, than they would have been if no evacuation had been made from veins, before the animal was killed, by opening the carotid artery. Taking away blood, therefore, in large quantities at once, and quickly, weakens much more than taking it away at ſeveral different times.

Take the argument in another view. The degree of weakneſs, which is produced by diminiſhing the quantity of blood in the bloodveſſels, is temporary or permanent. The temporary weakneſs is according to the quickneſs of the evacuation. If a large quantity of blood be taken away quickly, ſuch a degree of weakneſs may be produced, as to prove fatal; although the ſame quantity might have been taken away ſlowly, without having any bad effect. If ſuch bleeding be ſtopped before it has proved fatal, even if a fainting fit ſhould have taken place, the patient gradually recovers, and his ſtrength is reſtored to a certain degree, although he will ſtill continue much weaker, than he

was

was before the evacuation. If the ſame quantity of blood be taken away ſlowly, or at different times, no temporary weakneſs ſhall ariſe, no greater degree of diminution of ſtrength, than continues after the evacuation.

In intermitting fever it is the preſent ſtrong action of the arteries we wiſh to carry off. We do not by any means wiſh, to produce permanent weakneſs, for this would render the fever afterward irregular. The practitioner is therefore to weigh the degree of general inflammation, the ſtrength of the patient, the miſchief that is ariſing from general inflammation in the diſeaſe, and, from conſidering theſe things, determine the quantity of blood, which is to be taken away. The author has often found 16 ounces of blood, taken away at once, of more uſe than 24 ounces taken at twice.

General inflammation, or increaſed action of the heart and arteries, ſhown by the pulſe becoming hard, full, and ſtrong,

the tongue being covered with a thick white fur, there being confiderable fenfe of tenfion all over the body, may prolong, as has been faid, the hot fit of fever, fo that inftead of eight, ten, or twelve hours, it may continue for thirty-fix hours, or even ftill longer, and render the intermiffions fhort and incomplete; or it may make the difeafe have nearly the appearance of a continued fever, and may produce ftupor and delirium, and run a rifk of deftroying the patient. In fuch cafes it is proper to carry it off by making evacuations by bleeding, in order to avoid the danger, or to fhorten the paroxyfm. If it do not endanger the life of the patient, or prolong the paroxyfm, it will foon wear itfelf out, as the patient's ftrength is diminifhed by the efforts, which are made during the time of the paroxyfm, and the whole of the patient's ftrength is wanted, to fupport him during the courfe of the difeafe. It is to be obferved, however, when intermiffions become tolerably perfect, food may be given during the time of them, fo as to replenifh the

veffels

veſſels with blood, and recruit the ſtrength that is loſt by emptying them, and that it is therefore better to err in taking away too large than too ſmall a quantity of blood.

In intermittents happening in temperate and cold climates, the intermiſſions become almoſt always tolerably perfect. In ſuch caſes, therefore, we need not heſitate in taking away blood, if any danger or prolongation of the paroxyſm ſhould ariſe from general inflammation. In hot climates, where ſometimes there is hardly ever perfect intermiſſions, and where the patient is much ſooner exhauſted by the exertions, which take place in the paroxyſms, and when the intermiſſions and remiſſions are not ſo perfect as to allow the patient to be recruited by employing food which gives much nouriſhment, excepting there be real danger from the general inflammation, there ſhould be great caution before blood is taken away. Such danger may ariſe from the tenſion, from the head's being affected. If there

ſhould be ſuch real danger, a ſufficient quantity ſhould be taken away at once, ſo that the evacuation ſhall not require to be repeated.

If general inflammation ſhould ariſe at the beginning of a continued fever, the dangers from it, and the manner of managing the patient, will be ſhown in that Diſſertation, in which their regularities in ſuch fevers, and methods of obviating them, will be treated of.

Although general inflammation at the beginning of an intermittent may be one cauſe of endangering the life of a patient, or making the diſeaſe have the appearance of a continued fever, only that the paroxyſms do not take place in the evening, or prolonging the paroxyſm to thirty-ſix hours, and render the intermiſſions imperfect; it is by no means the only one which produces theſe effects.

Sometimes when the pulſe is full, ſtrong, and obſtructed, but by no means hard,

hard, nor does blood taken from the arm ſhow any inflammatory cruſt, for no reaſon which has been inveſtigated, the paroxyſm runs on for the length of thirty-ſix hours, in a tertian; for eighteen or twenty hours in a quotidian; and ſometimes, though rarely, to ſixty hours in a quartan. In theſe caſes, the patient falls into a profuſe ſweat, and a lateritious ſediment falls to the bottom of the urine; he feels himſelf much exhauſted, and perhaps falls into a ſleep for two or three hours; the ſleep having been prevented during the time of the paroxyſm; and the diſeaſe by no means goes off completely before the return of the next paroxyſm. In this caſe a few paroxyſms weaken the patient very much, and ſometimes prove fatal. This variety has alſo been called hemitriteon, or ſemitertian. It differs entirely from thoſe intermittents, which have their paroxyſms prolonged by general inflammation.

When this caſe of ſemitertian ariſes in temperate or cold countries, generally, if

the diſeaſe be left to itſelf, the paroxyſms ſhorten the criſis, and intermiſſions become more perfect, and the diſeaſe is changed into a regular quotidian, tertian, or quartan.

The remedies to be employed, to convert it ſooner into a regular tertian, are in the firſt place clearing the inteſtines from noxious matter contained in them by an emetic. It is beſt to employ the emetic in the evening, in the ſame manner as has been directed in a regular fever. On the next day, in the morning, a moderate doſe of rhubarb, or ſome other purgative, which tends to increaſe the periſtaltic motion of the inteſtines, ſhould be exhibited.

After the inteſtines have been cleared of their contents, preparations of antimony or ipecacuanha, or ſuch other medicines as tend to produce appearances ſimilar to thoſe which take place in the criſis of fever, ſhould be exhibited at the interval of four, five, or ſix hours, ſo as to act conſtantly

conſtantly on the ſyſtem. Theſe ſhould be continued for ſeveral days, until a perfect and longer intermiſſion has taken place. When a perfect intermiſſion has been procured, if it ſhould continue but for ſix or eight hours, the bark of the cinchona ſhould be given in powder to the quantity of a dram or two drams every hour, or even every half hour, or as much in quantity and as frequent as the ſtomach will bear.

The bark is to be omitted when the next paroxyſm, if it ſhould return, has come on, and repeated again in the next intermiſſion, provided it is as perfect as the former one. If it be not, the medicines producing appearances ſimilar to thoſe, which take place in the criſis of fevers, are to be recurred to until another intermiſſion has been produced, in which caſe the cinchona is to be again exhibited.

If the exhibition of the cinchona ſhould have prevented the return of the paroxyſm altogether, the practice ſhould be followed,

followed, that has been pointed out in a regular tertian.

Suppoſing that the exhibition of ſuch medicines as produce appearances ſimilar to thoſe, that ariſe in the ordinary criſis of fevers, ſhould not produce a perfect criſis, nor ſhorten the paroxyſms; and that the patient is ſo much weakened, that his life is endangered from the weakneſs taken place in the diſeaſe; the cinchona is to be employed in the beſt remiſſion that can be procured, and its exhibition regulated as has been already deſcribed in the management of a regular tertian.

Tertians, quotidians, or quartans, which have their paroxyſms prolonged in temperate or cold climates, are ſtill not very formidable; either falling of themſelves into fevers the paroxyſms of which are ſhorter, or their criſis more perfect; or being rendered by medicines, ſuch as have been above deſcribed, ſhorter, or their criſis more perfect.

When general inflammation takes place at the beginning of an intermittent, although it has not been accounted for why the general inflammation ſhould prolong the hot fit, yet it is evident, that it is often the cauſe of its prolongation.

When there is no great hardneſs of the pulſe, and often when there is no great fulneſs and ſtrength of it, but only frequency and obſtruction; the hot fit is frequently prolonged, even ſo as to leave no other mark of an intermittent to diſtinguiſh it from a continued fever, excepting the exacerbations not taking place in the evening.

When this happens in hot climates, the diſeaſe is the moſt formidable, which is incident to mankind. It has frequently been called the plague, and by ſeveral other names, indicating the moſt fatal diſeaſe.

In countries where the heat of the atmoſphere riſes above ninety degrees of Fahrenheit's

Fahrenheit's thermometer, where the ground is marſhy, or where there are ſtagnating waters, or where thick foreſts prevent the heat of the ſun from drying the earth; three diſeaſes, the moſt fatal to the human race, to wit, dyſentery alone, continued or remitting fever producing it, and irregular ſemitertians, often ariſe.

Of theſe diſeaſes the Author at preſent means to treat only of irregular ſemitertians.

Irregular ſemitertians, as well as theſe other diſeaſes, ariſe, as has been ſaid, from water ſtagnating in marſhes, or from the air's being kept moiſt in countries covered with wood, where great quantities of rain falls.

In all theſe caſes, if there ſhould be any animal or vegetable matter, (one hundred degrees of Fahrenheit's thermometer being the moſt proper heat for putrefaction) the animal and vegetable ſubſtances

ſtances fall readily into the putrefactive fermentation. The vapour ariſing from animal and vegetable ſubſtances putrefying has already been ſhown, in a former Diſſertation, to be one of the moſt powerful cauſes of fever. Several practitioners have thought this vapour always the cauſe of the ſemitertians, which are treated of at preſent.

The Author has ſhown in a former Diſſertation, that moiſture, by diſſolving in the atmoſphere, or by evaporation, generates cold. That cold ſo generated is alſo one powerful cauſe of fever; that it is often the cauſe of intermittents, as well as the other diſeaſes which have been above enumerated, without any putrefaction taking place, is certain from ſeveral inſtances. Theſe diſeaſes have been produced in countries where the water was only found at a foot or two under the ſurface of the earth, whence the moiſture has ariſen, and contaminated the air ſo as to occaſion theſe diſeaſes, while the ſoil has been perfectly dry, and there has not

been

been the leaſt appearance of putrefaction, the country being clear from woods. In this caſe it could be nothing but the moiſture, that produced the diſeaſe. One inſtance of this occurs in the encampment of the Engliſh army, in the war about the year 1745, in a ſandy plain in Flanders. Another in a region of Peru, where water is every where to be found at about ſeventeen inches below the ſurface of the earth, though the country itſelf is barren for want of water, and uninhabitable from the number of dyſenteries and ſemitertians which take place in it.

The Author could mention many inſtances of the like kind, but theſe are ſufficient to ſhow, that moiſture without putrefaction often produces this diſeaſe.

The next thing that draws our attention is, whether infection be not alſo one cauſe of theſe ſemitertians.

The Author has already ſaid, that all fevers are infectious; regular tertians being

ing the leaſt, and a regular continued fever, when its ſymptoms are in an intenſe degree, the moſt.

The opinion about the infectiouſneſs of the ſemitertians of hot climates, where they are ſo very fatal, has been various; and given by young and unlearned practitioners, with ſuch poſitive and contradictory firmneſs, that it is very difficult to form any true concluſion of it.

It has happened that a town, or even ſeveral towns, have grown up near harbours ſuddenly, in countries before uncultivated; and where the inhabitants, paying attention to trade only, have neglected the means of carrying off putreſſcent matter; when the heat has in this caſe ariſen to any very conſiderable degree, putrefaction has taken place, and occaſioned ſuch ſemitertians, as at Philadelphia.

When a ſemitertian has ariſen in a town under theſe circumſtances, the in-

habitants have been frightened, and anxious to inveſtigate the cauſe of the diſeaſe. One origin of it has ſuggeſted itſelf to them, viz. that infection has been imported by ſhips arriving from countries in which infectious fevers have ſubſiſted, almoſt always without any minute attention to the riſe of the diſeaſe.

When this happens in a town where the heat, under certain circumſtances, is very intenſe; as it is where winds blow in the beginning of the ſummer over a ſea, or a continent lying nearer the equator; and which at other times is ſubject to extreme cold, from winds blowing over a continent further from the equator. In ſuch towns, when the ſummer is a little advanced, and the heat becomes conſtant, great putrefaction takes place.—In conſequence, fevers have ariſen very ſuddenly, and univerſally. At this time many ſhips, from local circumſtances, have arrived from countries where infectious fevers are very common. The ſudden breaking out of this very fatal fever has

been aſcribed to the arrival of ſuch ſhips; yet ſhips of this deſcription have arrived at other times of the year, when no ſuch heat or putrefaction was prevalent, without any infection having taken place.—This renders it extremely doubtful, whether the fevers ariſe from imported infection.

The inhabitants of ſuch towns as have been deſcribed, upon the breaking out of ſuch a fever, have, from terrour of the infection, fled into the country. In this caſe two things might happen to prevent the diſeaſe ariſing among thoſe, who had gone into the country, the one, their not being expoſed to the infection, ſuppoſing the infection exiſting; the other, the removal from the maſſes of putreſcent matter.

It is to be inquired, to which of theſe two cauſes the exemption from ſuch fevers in thoſe who thus removed into the country was owing. The Author never having been in a ſituation

to obſerve himſelf the circumſtances, which could determine his opinion, muſt depend upon facts related to him by thoſe, who have been preſent under theſe circumſtances, and whom at the ſame time he has had an opportunity of croſs examining. No good evidence can be procured from the writers, who have lately treated on this ſubject in ſuch ſituations, from the great attachment to hypotheſis, which is ſo manifeſt among them. From the evidence the Author has been able to collect, it would ſeem, that theſe ſemitertians are not very infectious; ſince in hoſpitals, where patients were received in ſuch fevers, the phyſicians, ſurgeons, and other attendants, were not oftener ſeized with the fever than the other inhabitants of theſe towns. While in the war between Great Britain, France and Spain, where the American independence was the ground of the purſuit, when infectious fever broke out in the combined fleets of France, and Spain, which obliged them to put into the harbour of Breſt, in the hoſpitals of Breſt every one of the nurſes, and above one hundred and fifty

fifty of the practitioners in medicine, caught the disease, and were cut off by it.

Moreover, though many ships have arrived from these towns in the several ports of Europe, and in many certainly without performing any quarantine, yet the disease has never been produced in these.

The Author therefore thinks he may believe, that, though, as he has before serted, all fevers are infectious, yet these semitertians are like the other varieties of intermitting fevers, not very infectious.

It may be concluded therefore; that these fevers arise sometimes from putrefaction, sometimes from cold, generated by small drops of water evaporating or dissolving in some or all of the vapours which constitute the atmosphere, sometimes though less seldom from infection.

The Author now means to attempt a description of this disease. It must however

ever be remarked, that he never had an opportunity of obſerving this diſeaſe himſelf, never having been in a hot climate. His knowledge of it in the firſt place is taken from deſcriptions of it in authors. Theſe are in many particulars very defective. In the ſecond place, from deſcriptions of it which have been given him by many practitioners, who have treated the diſeaſe in warm climates.—Five of theſe phyſicians had been affected with it themſelves. In the third place, from the deſcriptions of it by ſeveral patients, who had been afflicted with the diſeaſe. From theſe, although they had not any knowledge of medicine, he had an opportunity of inquiring what appearances they recollected during the time of the diſeaſe.

The Author wiſhes firſt to deſcribe the diſeaſe in it's moſt violent form, and when it approaches neareſt to a continual fever.

In the firſt place, the attack of the diſeaſe has been ſo violent as to carry off the patient in the very firſt paroxyſm. In this caſe the diſeaſe, properly ſpeaking, muſt be called an ephemera. This was the caſe more particularly at Bencoolen, when Fort Marlborough was ſituate in a marſh near the ſea ſhore; it has ceaſed to be ſo fatal ſince the Fort has been removed to a more elevated ground.

It happens in a leſs violent degree in other caſes. Thus, when European troops have been ſent to the iſlands lying between the Tropics, on the eaſtern coaſt of America; the firſt attack of the fever has rarely been fatal. The patient has been ſeized at once with all the moſt violent ſymptoms of the firſt ſtage of fever.—Sometimes with a ſenſe of coldneſs; ſhivering; rigor and horror; great depreſſion of ſtrength, and want of diſpoſition to exert the powers of the mind, and a total apathy to all external objects: there has been great thirſt; the tongue has been covered ſometimes with a thick fur;

naufea, total averfion to food, want of fleep, and all the other moft violent fymptoms of the attack of a regular fever have taken place. Moreover, the difeafe in all thofe who had been affected with it whom afterward the author had occafion to fee, and who remembered the circumftance, began between fix in the morning, and eight at night. The attack was well marked, no fymptoms of the firft ftage having preceded for feveral days before.

After the attack, the exacerbations became much more violent, fo that the difeafe increafed very faft. The Author could never gain any information, whether thefe exacerbations took place in the evening, or at any other part of the day. This has been already fhown to be the great criterion between intermittent or remittent fevers, the exacerbations of which take place between fix in the morning and fix o'clock in the evening; and continued fevers, in which the exacerbations always take place between five and fix in the evening.

On the ſecond, third, fourth, or fifth day, the nauſea increaſes, and the patient begins to bring up a dark brown matter. This has rather the appearance of the matter formed upon the tongue in very violent fevers. It is alſo moſt probably formed upon the ſurface of the ſtomach, and perhaps of the duodenum, or even on the beginning of the jejunum. This matter has not the colour or taſte of bile. The force of the exertions in vomiting often occaſions a greater quantity of bile to be ſecreted, thrown back into the ſtomach, and brought up along with the dark brown matter. When this happens, it gives to the matter thrown up the taſte and appearance of bile. At other times, however, there is no appearance of bile at all, but only of this dark brown matter.

When ſuch vomiting has taken place to any great degree, the action of any medicine thrown into the ſtomach is apparently prevented. The food is not digeſted, and the patient is almoſt always

cut off. This has given the name of black vomit to the diſeaſe.

At other times, ſpaſmodic contractions of the extremities take place, ſimilar to the varieties of tetanos with violent delirium. Theſe ſymptoms are often fatal, though not ſo conſtantly as the vomiting which has been juſt deſcribed.

At other times the ſkin aſſumes a dark brown colour, which has given it the denomination of yellow fever.

Many have ſuppoſed, that this was owing to a quantity of bile getting into the blood veſſels, and have conceived that bile was the cauſe of the appearance. The colour, however, is very different from that which takes place in jaundice. The evacuations from the inteſtines have not that clay-like appearance, which is common in the jaundice. The ſecretion from the kidneys has not that deep yellowiſh brown, nor that thick ſediment, which have almoſt always been ſeen in

thoſe perſons, in whom bile has got into the blood veſſels.

The dark brown colour of the ſkin ſeems to the Author rather to ariſe from a greater ſecretion of the ſebaceous matter ſecreted by the ſebaceous glands of the ſkin, than from any other cauſe.

This fever often likewiſe has dyſentery ariſing in it, but as the Author does not at preſent mean to treat of that diſeaſe, he has only to obſerve, that this dyſentery, along with the fever, very ſoon weakens and wears out the patient, and alſo renders the diſeaſe extremely fatal.

The fever, as the author has deſcribed it, ſeems as if it were a continued fever. There is one circumſtance, however, which has convinced him that it is a ſemitertian. This is an agreement of all thoſe who have had, or have ſeen, or have treated the diſeaſe, in the following obſervations. It happens often, that a patient apparently becomes greatly relieved,

and appears in a ſtate as if he were recovering, when all at once a freſh attack takes place, and carries him off.

This diſeaſe, when it takes place in ſo violent a degree, is ſo very frequently fatal, that it ſeems rather to have confounded practitioners, and made them employ all kinds of the moſt violent remedies they could think of, as if a very violent and fatal diſeaſe could only be got rid of by very violent means. Some practitioners have taken away large quantities of blood; ſome have purged largely; ſome have given large quantities of mercury; ſome have thrown cold water upon the patient. All theſe and other violent meaſures ſeemed to have enhanced the danger, and rendered the diſeaſe much more fatal, than it would have been if it had been left to go through its ordinary courſe. It would ſeem not at all proper to exhibit medicines, which are not found to avail in ordinary and leſs dangerous caſes of the diſeaſe.

There does not ſeem to be ſo conſiderable a degree of general imflammation, as to render it neceſſary to make evacuation by bleeding, to obviate the danger that ariſes in conſequence of ſuch general inflammation. The general inflammation is not ſo great as to prolong the paroxyſm, ſo as to require this evacuation; and the author has before affirmed, that bleeding from any large veſſel indiſcriminately, in any part of the body, has no power of diminiſhing or carrying off fever. As far therefore as he can judge, he ſhould expect no advantage, but great miſchief, from taking away a quantity of blood, or repeating the evacuation. He thinks it would hardly ever be prudent, to take away blood at all.

Purging, as has been ſaid in former Diſſertations, excepting ſo far as to keep the bowels free from putreſcent matter, is extremely hurtful in fever. The quantity evacuated weakens the patient, and diminiſhes the powers of the body, ſo as to render a patient unable to ſupport himſelf

himſelf during the courſe of the diſeaſe. At the ſame time, the alteration in the circulation ariſing from the purgative, cauſing a larger flow of blood to take place in the interiour parts of the body, makes the effort in the hot fit to produce a perfect criſis, or greater relaxation of the paroxyſm, leſs efficacious. For its efficacy depends on the uniformity of its action, in every part of the ſyſtem, as the author has formerly pointed out. The author muſt therefore be of opinion, that large evacuation by purging is very detrimental, inſtead of being uſeful in this diſeaſe.

Mercury cures the venereal diſeaſe, which no other medicine will cure, or at leaſt not with any degree of certainty. Phyſicians have ſeemed to have concluded, that whatever medicine will cure one diſeaſe, which no other medicine can cure, will cure all diſeaſes, which no other medicine will cure. This ſuppoſition has occaſioned mercury's being employed in a variety of diſeaſes, where it evidently

evidently does a great deal of miſchief. It has alſo occaſioned it to be employed for a great many purpoſes, for which other medicines are much more properly adapted. Mercury has been employed in all caſes of fever, of an ordinary degree of intenſeneſs, whether continued or intermitting, by various practitioners, without any ſenſible good effect, either in producing criſis, occaſioning more perfect relaxations, or ſhortening the ordinary courſe of the diſeaſe. It is evident therefore, that it is imprudent to exhibit it in theſe moſt violent fevers.

The next thing that requires conſideration is, whether we be to leave the fever to go through its ordinary courſe; as although it is a very dangerous diſeaſe, it is by no means always fatal, but in many caſes has gone off when left entirely to itſelf; or whether ſome effort is to be made to carry it off; or whether ſome medicine may not be employed to make it go through its courſe with leſs danger to the patient.

Pre-

Preparations of antimony, ipecacuanha, and other medicines, have been ſhown to produce ſymptoms ſimilar to thoſe, which take place in the ordinary criſis of fever. Theſe, eſpecially Dr. James's powder, have frequently been employed in this very violent diſeaſe. The patient's ſtomach very ſoon becomes ſo extremely irritable, that any doſe of ſuch medicines, which might be expected to be at all efficacious, has produced vomiting; which, when it takes place in any great degree, has hardly ever been got over, but has deſtroyed the patient. The author conceives it is poſſible, that preparations of antimony, of which he has ſaid in a former Diſſertation tartarized antimony is the beſt hitherto known, if they have any chance of carrying off the diſeaſe, by producing ſymptoms ſimilar to thoſe which take place in the ordinary criſis of fever, ought to be exhibited immediately on the attack of the diſeaſe. This immediate exhibition of them, he apprehends, has been prevented; in the firſt place, by the great depreſſion of ſtrength,

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and perfect apathy of the patient, which arife immediately on the attack of the difeafe: Secondly, by the general want of energy of the inhabitants of very hot climates: Thirdly, by the hurry which takes place in all military operations; this difeafe being particularly apt to arife in armies in very hot climates: Laftly, from the great hurry of practitioners, when a town, diftrict, or country, is feized with an epidemic difeafe. The author can fay nothing from his own experience, but fhould be difpofed, at the moment of the attack of fuch a difeafe, to employ as great a dofe of tartarized antimony as the patient could bear without producing naufea; that is, from a quarter to a third part of a grain, together with about half a grain of opium. The medicine fhould be repeated every four hours. The patient fhould be laid in bed, and covered with a light covering of cotton. Warm watery farinaceous and mucilaginous fluids fhould be drunk frequently. If this practice be not begun within fix hours from

the attack, the author ſhould not expect much ſucceſs from it. At any rate he propoſes it with great diffidence.

If by this practice, that moiſture ſhould be reſtored to the ſkin, with which it is generally covered in hot climates, it may be continued for two or three days: and if the ſymptoms of the diſeaſe ſhould be ſo far diminiſhed, as that any thing like a criſis ſhould be brought on, and the ſtomach be quiet, the author then would recommend the exhibition of peruvian bark in ſubſtance, to the quantity of a dram every hour, or as much as the patient's ſtomach will bear without producing ſickneſs.

As to the action of any other remedy, which the author has pointed out, as carrying off or alleviating regular continued fever, or regular tertians, ſuch as inflaming the ſkin in any part of the body, applying leeches to the temples, fomenting the lower extremities, &c. he has little hope that any of them will be of uſe.

The

The method which has been recommended of nouriſhing, ſupporting the ſtrength, and treatment in other reſpects in a regular continued fever, while it is going through it's ordinary courſe, ſhould alſo be employed in this diſeaſe.

When ſemitertians happening under ſimilar circumſtances, and from the ſame cauſes, are not ſo near in their appearances to continued, but nearer to regular remittent and intermittent fevers, the following appearances take place, as far as the author can collect from the hiſtories of the diſeaſe, which have been given by authors, or have been related to him by thoſe converſant in the diſeaſe itſelf.

The firſt accounts of the diſeaſe the author means now to deſcribe are taken from the notes ſent daily by the phyſicians of Alexander of Macedon. The author cannot help taking this opportunity of giving his opinion of this man, who he thinks had the greateſt energy of mind, and was the greateſt lover of the happineſs of the

human ſpecies of any man, whoſe hiſtory has reached our times. Thoſe notes or bulletins were to inform the Grecian and Perſian nobility of the progreſs of the diſeaſe, which, as the author has already ſaid, he caught by ſurveying the marſhes on the banks of the Euphrates, in order to form a plan for draining them. Theſe notes are preſerved by Arrian.

Neither the Greek phyſicians, in the time when the Lacedæmonians and Athenians conteſted the dominions of the coaſts of the Mediterranean, or thoſe bordering upon them, nor during the Roman empire, nor the very few Roman phyſicians whoſe works have come to us, were converſant in diſeaſes of countries, the heat of which was generally, for any conſiderable part of the year, above ninety degrees of Fahrenheit's thermometer in the ſhade, or in the night time. The author therefore has not been able from their works, which are the great foundation of all medical knowledge, to inveſtigate the hiſtory or man-

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ner of treatment of thofe femitertians, which are between thofe which fo much refemble continued fevers, and thofe which Greek phyficians have defcribed. The author muft therefore rely for further information upon the very few accounts, which can be depended upon; thefe have been publifhed by practitioners who have practifed for a confiderable time, in very hot climates, and who had before received a regular medical education. Befide thefe he has received information from thofe who have lived in fuch climates, and have attended patients afflicted with the difeafe, and from patients who have themfelves gone through the difeafe.

Such femitertians begin at once with an attack of the firft ftage of fever; there is generally chillnefs, and not uncommonly rigor and horrour, and confiderable depreffion of ftrength; but not that total careleffnefs about every thing which takes place in the fever juft defcribed. There is drynefs of the fkin, and naufea. The chillnefs is followed by heat; great thirft takes

place, the pulſe becomes frequent to a hundred and twenty, or a hundred and thirty ſtrokes in a minute: Moſt commonly the tongue is alſo dry and covered with a whitiſh fur. There is often violent pain in the forehead, evidently in the external parts, that is, thoſe without the cranium. In the firſt paroxyſm, which obſerves the tertian type, there is hardly any appearance of remiſſion, except it be that the pulſe becomes ſomewhat leſs frequent about thirty-ſix hours after the attack. The ſecond exacerbation does not take place in the evening, but between ſix o'clock in the morning and five in the afternoon. After the ſecond exacerbation, ſomething more like a criſis takes place, and is more conſpicuous after the third and fourth. If the diſeaſe ſhould continue longer, and have leſs appearance of criſis, the paroxyſms run more into each other. Delirium, if it did not take place before, often ariſes, and the diſeaſe is frequently fatal. Nevertheleſs it ſometimes terminates its courſe, if left entirely to itſelf, in two or three

weeks,

weeks, and the patient recovers much more frequently than in the cafe juft before defcribed.

It happens alfo very commonly in this cafe of femitertian, that during the beginning, in the violence of the attack and hot fit, no evacuation takes place from the inteftines. During the relaxation from the paroxyfm diarrhœa, however, takes place. It ceafes upon the recurring of a frefh paroxfym of the difeafe. When this happens it weakens the patient, and adds confiderably to the danger.

In a femitertian, fuch as has here been defcribed, no time is to be loft, the difeafe being very often full as acute, as a continued fever in temperate climates: that is to fay, it often terminates in the fecond, or at moft the third week of the difeafe.

It hardly ever happens, that there is fuch a degree of general inflammation as

to require evacuation by bleeding. If it be not neceſſary, it is always hurtful, by weakening the patient.

The primæ viæ ought to be cleared immediately upon the attack by an emetic and laxative, ſuch as have been deſcribed in treating of irregular tertians, only no time is to be loſt.

Medicines, ſuch as preparations of antimony, of ipecacuanha, &c. which have a tendency to produce appearances, ſuch as ariſe in the ordinary courſe of a regular fever, are to be exhibited during the time of one or two attacks and remiſſions; afterward, without waiting for a perfect intermiſſion, the bark of the cinchona is to be exhibited in the beſt remiſſion that can be procured every hour, and in as large a quantity as the patient's ſtomach can bear. If the ſtomach ſhould reject a ſmall quantity of it, ſuch as forty grains, or if it ſhould occaſion purging, a moderate quantity of opium, ſuch as five or ſix drops of tinctura opii, equal

to a fifth part of a grain of opium, with five grains of the pulvis aromaticus of the London Diſpenſary, may be given along with each doſe of it. The powder of the cinchona is to be given during the laſt eighteen hours of the paroxyſm and remiſſion, if the fever obſerves the tertian type, which it generally does. Afterward the bark ſhould be omitted, whether the paroxyſm return or not, for twenty-four hours, and then repeated again, and this practice is thus to be gone on with till the diſeaſe is carried off, if this can be effected by this medicine.

The effects of inflaming the ſkin, in any part of the body, bleeding with leeches applied to the temples, or any other remedies, which have been ſaid in former Diſſertations to be uſeful in the diſeaſe, the author can in no wiſe judge of, as he has not had any opportunity of obſerving them himſelf. Neither has he been able to collect their effects either from the authors who have treated of ſuch diſeaſes, or thoſe perſons who have

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ſeen, or been affected by them, with whom he had an opportunity of converſing.

The author now returns to irregularities which take place in intermittents, ſuch as happen in temperate climates.

It happens not uncommonly, that in an intermittent of any type the quantity of blood thrown upon the lungs in the attack of the diſeaſe occaſions cough, attended with expectoration, eſpecially when the fever has continued for ſome time.

At the beginning, the cough and difficulty of reſpiration are often without any expectoration. Sometimes during the time of the paroxyſm, the cough is without expectoration, but expectoration takes place during the time of the remiſſion or intermiſſion.

This affection of the lungs is ſometimes ſomewhat ſimilar to peripneumony,

mony, but more frequently to catarrh, or rather a mixture of catarrh and peripneumony. In either caſe general inflammation, ſuch as has been deſcribed, takes place ſometimes. The pulſe becomes hard and frequent, without being full and ſtrong, or attended with ſuch affection of the brain, or tenſion in the whole ſyſtem, as have been before enumerated. The frequency and hardneſs of the pulſe continue during the intermiſſion, and give an appearance of remiſſion only, and not intermiſſion of the diſeaſe.

When this cough goes on for any length of time, the pulſe becomes contracted and ſmall, continuing at the ſame time hard and frequent. The natural evening paroxyſm of fever is conſiderably increaſed. The proper attacks of the intermittent, whether it be tertian or quartan, are rendered more obſcure. The patient is weakened and emaciated. The natural evening paroxyſm goes off with ſweating between four and five o'clock

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in the morning, ſo that the diſeaſe puts on the appearance of, and has often been miſtaken for phthiſis.

If ſuch inflammatory affection of the breaſt ſhould ariſe ſoon in an intermittent, it becomes neceſſary, beſide employing the methods already recommended to produce perfect intermiſſions, to bleed upon the ſkin of the breaſt by means of leeches or ſcarification, and the applica- of cupping glaſſes. The ſkin of the breaſt ſhould be inflamed by bliſters. Expectorants, ſuch as gum ammoniac, and ſquills, ought to be employed. Mucilaginous, and oily medicines are to be exhibited to defend the mucous membrane from the ſtimulus of the neutral ſalts of the thin mucus which is ſecreted. If by theſe means the inflammatory appearances, whether they were peripneumonic, or catarrhal, be entirely got the better of, or very much relieved, we are to endeavour to prevent the return of the paroxyſm. This is to be attempted, in the firſt place, by employing a purgative im-

mediately

mediately on the going off of the paroxyſm. An hour before the attack of a freſh paroxyſm is expected, we are to exhibit ipecacuanha or antimony, along with ſtimulants and opium. We are then to lay the patient in bed, and give him warm watery fluids to drink along with mucilaginous ſubſtances in ſmall quantities frequently, ſo as to endeavour to produce ſweating. By theſe means the paroxyſm is often prevented from taking place. This practice has already been deſcribed more fully.

It is better to attempt to carry off the diſeaſe in the firſt place, by theſe means, than to employ the bark of the cinchona; for this bark is apt to increaſe the inflammatory affection of the thorax. Theſe remedies however do not counteract the acceſſion, and prevent it from taking place: and if the inflammatory ſymptoms of the thorax have been in a great meaſure ſubdued, by the remedies which have been juſt mentioned, then the cinchona is to be employed during the intermiſſions, as

has

has been deſcribed in the ſecond Diſſertation, ſo as to put a ſtop to the diſeaſe.

The cinchona, however, is by no means to be made uſe of, if the inflammatory affection of the thorax be not ſubdued in a very great degree.

When the patient was conſiderably weakened, and the ordinary evening paroxyſm of fever was much increaſed, ſo that hectic ſymptoms came on; the author heſitated very much in the beginning of his practice, whether it were proper to employ the cinchona to endeavour to put a ſtop to the diſeaſe; but from trying various treatment in many caſes he is ſatisfied, that it is by much the beſt to employ the cinchona in large quantities, as has been before deſcribed. With any practice the diſeaſe in this caſe is not uncommonly fatal.

The next danger which is apt to take place, ariſes alſo from the blood's being propelled from the exteriour parts, in the

time

time of the attack, to the large internal veſſels; but eſpecially to the veſſels of the abdomen, and particularly thoſe of the ſpleen and liver.

The ſpleen becomes enlarged and hard, and ſinks lower in the abdomen, ſo as to occaſion a hard tumour there. Upon diſſection after the death of the patient, it has been found much enlarged, harder, and more unequal in its internal appearance. The whole abdomen in this caſe is ſwelled, or there is rather the feel of a hard circumſcribed tumour in it. The patient feels a ſenſe of weight and diſtention, the digeſtion does not go on well, and coſtiveneſs is apt to take place. This caſe is however not very fatal.

A like ſwelling and hardneſs are apt to ariſe in the liver. The tumour in this caſe is more in the region of the liver, it does not deſcend ſo low. Upon diſſection the liver has the ſame appearance of hardneſs and inequality.

There are tumours in the abdomen, ſo ſituate, and ſo ariſing, that the author cannot believe they can be affections of either the ſpleen or the liver; but he has not been able to find any caſe of a patient's having been opened, where the tumour ſubſiſted in any other part. Theſe tumours have been called ague cakes. They ariſe more frequently in quartans than in tertians, and more frequently in tertians than in quotidians.

Theſe tumours do not ſeem to alter much the progreſs of the diſeaſe, nor do they ſeem to prevent the diſeaſe from being carried off, either by the ordinary progreſs of the fever itſelf, or by the exhibition of the cinchona, or any other remedy which has been employed to carry off the diſeaſe.

If the diſeaſe ſhould be terminated either in its ordinary courſe, or be cured by any medicine, theſe tumours are left, and often continue for many months, or even years, without any great detriment

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to the patient, as they at laſt gradually ſubſide, and go off. Sometimes when they have ariſen after a quartan has continued for a month or two, they have again ſubſided after it has continued for two or three months longer, and before the quartan has finally ceaſed.

When a fever has ceaſed of itſelf, or has been carried off by any medicine, and theſe tumours have been left, they are always diſtreſſing, and often hurtful in a conſiderable degree. The patient feels uneaſy, the appetite is more or leſs diminiſhed, the patient feels a ſenſe of weight, and indiſpoſition to action, the periſtaltic motion of the inteſtines does not go on regularly, the colour of the ſkin does not recover its clearneſs, the patient, though not ſo ill as to be prevented from going through his ordinary buſineſs, is nevertheleſs languid.

If from any cauſe the intermittent ſhould recur, and continue for ſome time, it is not uncommon for theſe tumours to

ſubſide again, and when the diſeaſe is carried off by medicine, or goes off by its ordinary courſe, the patient recovers his health perfectly.

In many caſes tumour ariſing in the liver from the ſame or any other cauſe, produces hardneſs like ſcirrhoſity in various parts of this viſcus. Theſe by preſſing upon the branches of the vena portarum which paſſes into the liver, and branches in the manner of an artery, prevent the blood from returning from the abdominal viſcera with the ſame facility, that it does commonly. The paſſage of the blood being thus retarded, occaſions a greater extravaſation of lymph into the cavity of the abdomen, ſo that the ordinary exertion of the abſorbents is not ſufficient to take up the whole lymph. Thus an aſcites takes place. The tumour which ariſes in conſequence of the accumulation of water in the abdomen, preſſing upon the liver, increaſes the ſcirrhoſity there, and the diſeaſe is generally fatal.

Theſe apparently ſcirrhous tumours not uncommonly preſs on the ductus communis coledochus, the duct of the gall bladder, the hepatic duct, or the ducts which have been commonly called pori biliarii, which the author would rather call hepatic ducts. The preſſure of theſe ſcirrhous-like tumours upon any of theſe ducts may prevent the whole or part of the bile from getting into the duodenum, occaſion it to be abſorbed, and produce jaundice of itſelf, without any concomitant dropſical ſymptom, or along with it aſcites. When this happens, the diſeaſe is generally fatal.

When aſcites is occaſioned by ſuch ſcirrhous-like tumours produced in the liver in intermitting fevers, the ſkin often aſſumes a dirty yellowiſh brown colour. This colour the author rather attributes to the colouring part of the rete mucoſum, or the ſebaceous matter ſecreted by the glands of the ſkin, than to bile abſorbed, or its not flowing into the duodenum. There is no appearance

which ſhows that bile does not get into the inteſtines, ſuch as want of colour in the fæces, &c.; or of its having got into the bloodveſſels, ſuch as the urine's becoming a yellow dye, &c. The author has already ſhown, that no bile is ever contained in the bloodveſſels, unleſs it has been previouſly formed in the liver and abſorbed.

The ſame determination of blood from the bloodveſſels upon the abdominal viſcera, when the patient becomes weak after an intermittent has continued for two or three months or longer, ſometimes occaſions an increaſed ſecretion from the glands of the inteſtines. Diarrhœa is thus produced. This diarrhœa, like that which has already been deſcribed as taking place in intermittents in hot climates, is more ſevere during the remiſſions and intermiſſions; and leſs ſevere, or ceaſes altogether, at the time of the acceſſion, and during the time of the paroxyſm. Such diarrhœa tends to increaſe the weakneſs conſiderably. Frequently

quently this weakneſs occaſions dropſical appearances. At firſt œdematous ſwellings appear in the lower extremities. Theſe increaſe, riſing up to the thighs, and then to the integuments of the abdomen. Aſcites alſo takes place. This is an accident very dangerous and difficult to get the better of. If aſtringent remedies be employed, ſo as to put a ſtop to the diarrhœa, the dropſical appearances increaſe, and the intermittent continues to recur, although often very obſcurely, and very irregularly. If the diarrhœa be allowed to go on, or if it have been ſtopped, and be allowed to return by leaving off the aſtringents, the weakneſs increaſes in ſuch a degree as to deſtroy the patient. If the bark of the cinchona be exhibited, it often increaſes the diarrhœa, without having the effect of preventing the irregular returns of the attacks or exacerbations. It appears to the author to be beſt in this caſe, firſt to clear the primæ viæ, by employing about twenty-five grains of rhubarb; after its operation is over to exhibit cinchona in

pretty confiderable quantity, fuch as a dram every three hours, and to give at the fame time a grain of ipecacuanha, with fifteen drops of tincture of opium, (equal to half a grain of opium), together with a moderate quantity of any of the warmer fpices every four hours. The author, however, is very far from faying, that this practice is always efficacious in curing the difeafe, which, when it has been allowed to run on to this ftate, is not uncommonly fatal.

Suppofe, that no tumour has taken place in any of the abdominal vifcera, fo as to comprefs either the lymphatics or the veins, and that no diarrhœa has taken place; yet it happens not uncommonly, when an intermittent has run out to a great length, that fuch weaknefs arifes as to produce a dropfy. This happens more frequently in quartans than in tertians, and more frequently in tertians than in quotidians.

Firft of all, œdematous fwellings begin to take place in the lower extremities.

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Theſe as uſual increaſe, while the patient is in an erect, and diminiſh when he remains for ſome time in nearly a horizontal poſture. As he is generally in an erect poſture during the day-time, the ſwelling is greater in the evening, and as he is in a horizontal poſture during the night, it is leſs in the morning.

Beſide this increaſe and diminution of the tumour, in conſequence of the patient's being in an upright or in a horizontal poſture, an increaſe of the tumour takes place during the intermiſſion, the tumour being, as far as the cauſe juſt mentioned allows it, greateſt at the end of the intermiſſion. When the paroxyſm comes on it diminiſhes; during the time of the paroxyſm it totally ſubſides, if the weakneſs have not become very conſiderable.

The increaſed exertion of the lymphatics during the hot fit appears to occaſion a total abſorption of the lymph; the want of this exertion during the day in which no paroxyſm takes place, allows

the lymph to be accumulated in the cavities.

Suppofing the difeafe be left entirely to itfelf, and fhould terminate by a more fevere exacerbation's producing a perfect crifis, or by the difeafe wearing itfelf out, and gradually fubfiding, this dropfy is very rarely fatal. After the difeafe is gone off, if the ftrength be reftored, the lymph is abforbed, and the patient regains his former health.

If the fever fhould go on, the tumour rifes higher, occupies firft the integuments of the abdomen, and the cellular membrane among the mufcles of the loins; afterward afcites is joined with it, the functions of the inteftines are hurt, and the patient finks, the external appearances of the dropfy becoming gradually nearer phlegmafia than anafarca.

When the bark of the cinchona, or any other remedies having fimilar effects are exhibited, and prevent a return of the

the exacerbation, then the exertions of the lymphatics during the hot fit, and the abſorption of the lymph do not take place, the lymph is not abſorbed, and the dropſical ſymptoms appear to be very much increaſed.

The dropſical ſymptoms appearing thus to increaſe, when the intermittent has been put a ſtop to by the cinchona, or other medicines having a ſimilar effect, has occaſioned an opinion, that the cinchona gave occaſion to the dropſy, and the practice of exhibiting it has been reprobated by many practitioners. It is to be obſerved however, that ſuch dropſical ſymptoms have ariſen ſolely from the weakneſs occaſioned by the continuance of the diſeaſe. It is further to be obſerved, that the increaſe of the dropſical ſymptoms, after the paroxyſms of the fever have been prevented from returning, is owing to the want of that alleviation of the dropſy, which took place during the paroxyſm by the greater exertion of the abſorbents during the hot

ſit. At the ſame time that, as well as the other exertions during the paroxyſm, tend to weaken the patient, ſo as to become the very cauſe of the final increaſe of the dropſy. The putting a ſtop to the paroxyſm, therefore, although it prevents the temporary alleviation of the dropſical ſymptoms, yet at the ſame time it removes their original cauſe. It would appear therefore from this view, that it is proper if poſſible to put a ſtop to the further progreſs of the diſeaſe, and ſo prevent the patient from being more and more weakened.

The author, accordingly, for many years has not heſitated, when dropſy has ariſen in an intermittent which has continued long, and there has been no cauſe to ſuſpect induration in any of the viſcera occaſioning preſſure on the lymphatics or veins, to exhibit the bark of the cinchona, and endeavour by this means to prevent the return of the paroxyſm. He has found in ſuch caſes, that the

dropſical

dropſical appearances, although they at firſt increaſed, yet as the ſtrength returned generally began by degrees to diminiſh, and at laſt diſappeared entirely, and the patient recovered his health.

It happens not uncommonly, if intermittent fevers have been entirely neglected in the beginning, or when the bark of the cinchona has been employed improperly, that is, not according to the mode preſcribed in the Diſſertation on regular tertians, that the diſeaſe runs out to a great length, whatever its type may be. It alſo becomes irregular, varies its type, and is often only a remittent. In theſe caſes the patient is weakened, and is apt to ſink under ſuch weakneſs without any dropſical ſymptom, or affection of the thorax.

When this happens the pulſe always keeps up a degree of frequency. The paroxyſms and remiſſions are ſometimes ſufficiently diſtinguiſhable, at other times they are hardly diſtinguiſhable. The tongue is ſometimes conſtantly covered with a mu-

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cus which is of a whitiſh or browniſh colour. The appetite is loſt, and the patient gradually ſinks. He may however remain in a doubtful ſituation for many weeks, and at length recover.

In ſuch caſes, and more particularly in thoſe in which cinchona has been employed improperly, or ſo as not to cure the diſeaſe, however properly it may have been employed; preparations of the metals, ſuch as have been enumerated in the Diſſertation on regular tertians, have been had recourſe to ſometimes with effect. Of theſe, preparations of arſenic ſeem to have been moſt frequently efficacious. If it be ever proper to employ any preparation of arſenic internally, the beſt ſeems to be the compound of kali with calx of arſenic, which many modern chemiſts call acid of arſenic, and which has been known by the name of white arſenic. The author has often attempted to give various preparations of arſenic in cancerous caſes, but although he has taken care to exhibit it in ſuch

ſmall quantities, as not to affect the ſtomach and inteſtines, yet upon continuing it, ſuch excruciating pain has taken place in the extremities, and. uch a degree of ſtupor, as always to force him to deſiſt from it. Add to this, that it is ſo dangerous a medicine, that if it happen to be given in too large a doſe it is often fatal. It is not to be intruſted therefore in the hands of ſuch young men, as are too frequently employed to compound medicines in the ſhops of the apothecaries of this country. An errour too of half a grain in a doſe may be fatal: it is not on this account to be truſted to the ſcales, which are commonly employed in apothecaries' ſhops, and which are often not ſenſible to half a grain.

Next to arſenic, preparations of zink ſeem the moſt powerful. The calx which is found in the chimneys of furnaces, in which braſs is produced by combining copper with zink, and which, when it is of a light gray colour, has been called cadmia, if of a dark dirty blue colour,

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tutty, was formerly very much in uſe in complaints which return by paroxyſms, and among others in intermitting fevers. Lately the calx formed by expoſing to the air of the atmoſphere the ſurface of zink melted, and heated to a white heat, called flowers of zink, has been more in uſe. The author does not know of any comparative experiment on which this has been grounded. Sometimes likewiſe zincum vitriolatum has been exhibited for the ſame purpoſes.

Preparations of copper have been uſed more ſeldom, though perhaps, they are as efficacious. Formerly cuprum acetatum was much employed, both externally and internally, though it has now fallen very much into diſuſe. It has been conceived, that copper combined with ammonia muriata, by moiſtening ſheets of copper with a ſolution of ammonia muriata in water, and expoſing them to the air, is leſs ſtimulant in proportion to its other powers, and conſequently is leſs apt to affect the ſtomach

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and inteftines, and therefore more proper to be employed. The difpofition of preparations of copper to effect the ftomach and inteftines has made it be confidered as a very active poifon; which however, independent of this effect, is not true. If cuprum ammoniacale actually did produce lefs effect on the ftomach and inteftines in proportion to its other powers, it would be undoubtedly a more ufeful medicine; but the author has not found upon trial that this is the cafe, and therefore conceives, that cuprum vitriolatum is the moft certain of the preparations of this metal.

The preparations of iron, which have been employed in medicine, have been very various: but whether in its metallic form, or calcined, or combined with acids or with alkalis, or with neutral falts, its virtues do not feem to be very different, and its powers of preventing the returns of the paroxyfms of an intermittent feem to be the leaft of thefe four metals. At the fame time it has no noxious or deleterious

effect.

effect. As a ſtrengthening medicine to keep up the force of the ſyſtem, during the progreſs of an intermittent, its powers are very conſiderable, and it has often been uſed.

Whichever of theſe metals, or whatſoever of their preparations are employed with a view to prevent the return of the paroxyſms of an intermittent, they ſhould be exhibited in as large doſes as the ſtomach will bear. They ought only to be exhibited in the times of the intermiſſions. This rule however is not to be ſo ſtrictly adhered to, as the exhibition of the bark of the cinchona, eſpecially if the intermiſſions have become imperfect, or been converted into remiſſions. In other reſpects the ſame rules are to be followed, which have been before laid down in regard to the exhibition of the cinchona.

FINIS.

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